

REMARKS

Claims 1-51 were filed in the present case. The claims were subject to a restriction requirement. The Applicants elected Claims 1-43 in a prior response. As such, Claims 1-43 are pending and stand rejected by the Examiner. In the present Office Action, the Examiner made a number of arguments, objections, and rejections. For clarity, the rejections at issue are set forth by number in the order they are herein addressed:

(1) Claims 1-6, 10-18, 22-31, and 35-43 stand rejected under 35 U.S.C. 102, as allegedly being anticipated by U.S. Patent 5,846,723 to Kim *et al.* (hereinafter the '723 patent); and

(2) Claims 7-9, 19-21 and 32-34 stand rejected under 35 U.S.C. 103, as allegedly being obvious over the '723 patent.

I. The Claims are not Anticipated

The Examiner has rejected Claims 1-6, 10-18, 22-31, and 35-43 under 35 U.S.C. 102, as allegedly being anticipated by the '723 patent (Office Action, pg. 2). The Applicants respectfully disagree and submit that the rejection is improper because the '723 patent does not teach all of the elements of Claims 1-6, 10-18, 22-31, and 35-43.

The methods of the present invention involve identifying accessible sites on target sequences by analyzing the extension of a plurality of primers on the target (primers that bind to inaccessible sites are not extended, while primers that bind to accessible sites are extended). In contrast, the '723 patent specifically uses primers directed to accessible sites (*i.e.*, based on preexisting knowledge of the accessible sites primers to inaccessible sites are avoided). For example, Col 1, line 60 of the '723 patent, in its broadest description of the technology, states that "polynucleotides that specifically hybridize to accessible regions are used."

In particular, in regard to independent Claim 1 (and dependent Claims 2-6 and 10-15), the '723 patent does not teach the step of "exposing said plurality of extension primers and said

extension agent to said target nucleic acid under conditions wherein primers comprising first regions that are complementary only to an inaccessible site in said target nucleic acid are not extended by said extension agent, and wherein primers comprising first regions that are complementary to at least one accessible site of said target nucleic acid form an extension product." The Examiner cites Example 1 and Figure 1 of the '723 patent as teaching this element (Office Action, pg. 3). The Applicants respectfully disagree. Indeed, the '723 patent does not teach any method of selecting a primer that comprises **both** exposing the same target to a plurality of primers and forming **any** extension products. As such, the rejection of Claims 1-6 and 10-15 should be withdrawn.

With regard to independent Claim 16 and dependent Claims 17-18 and 22-27, the '723 patent does not teach the step of "determining at least a portion of the sequence of an extension products." The Examiner has pointed to no teaching in the '723 patent of this claim element. Nor does the '723 patent teach the step of "exposing said plurality of extension primers and said extension agent to said target nucleic acid under conditions wherein primers comprising first regions that are complementary only to an inaccessible site in said target nucleic acid are not extended by said extension agent, and wherein primers comprising first regions that are complementary to at least one accessible site of said target nucleic acid form an extension product." As such, the rejection of Claims 16, 17-18 and 22-27 should be withdrawn.

With regard to independent Claim 28 and dependent Claims 29-31 and 35-43, the cited reference does not teach the claim element of "exposing said plurality of extension primers and said extension agent to said target nucleic acid under conditions wherein primers comprising first regions that are complementary only to an inaccessible site in said target nucleic acid are not extended by said extension agent, and wherein primers comprising first regions that are complementary to at least one accessible site of said target nucleic acid form an extension product." Further, the '723 patent does not teach the claim element of "treating said extension products with said amplification agent and said first and second amplification primers to generate one or more amplification products, said amplification products having a length, wherein said

length of said amplification products provides a distance of an accessible site on said target nucleic acid from said first domain of said target nucleic acid" or the claim element of "determining a location of one or more accessible sites on said target nucleic acid using said distance." The Examiner cites Examples 1 and 2 and claims 26-29 and 34 of the '723 patent as teaching such elements (Office Action, pg. 6). However, the cited regions of the '723 patent (or any teaching in the '723 patent) do not teach Claim 28 of the present invention. The Examiner has pointed to no specific support for the Examiner's statement that the '723 patent teaches a method that comprises the step of generating amplification products where the length of the amplification products provides a distance of an accessible site from a first domain of a target nucleic acid. Nor has the Examiner pointed to any specific support in the '723 for the teaching of the claim element of determining a location of one or more accessible sites on said target nucleic acid using said distance. Rather, the '723 patent teaches away from such a method by utilizing primers that hybridize to known accessible regions of a target. As such, the rejection of Claims 28-31 and 35-43 should be withdrawn.

II. The Claims are Non-Obvious

The Examiner has rejected Claims 7-9, 19-21 and 32-34 under 35 U.S.C. 103, as allegedly being obvious over the '723 patent (Office Action, pg. 6). The Applicants respectfully disagree. Applicants submit, in all cases, that the Examiner fails to provide a prima facie showing of obviousness as required under § 2143 of the Manual of Patent Examining Procedure (MPEP). In particular, there are three elements that must be met to provide a prima facie obviousness showing. First, there must be a suggestion or motivation in the references or the knowledge generally available to combine or modify the reference teachings. Second, the prior art must provide a reasonable expectation of success should the suggested combination or modification take place. Finally, the prior art must teach or suggest all the claim limitations. A showing of obviousness will fail if any one of these elements is not met. Applicants submit that the Examiner has failed to meet any of the prima facie elements of obviousness.

In particular, the Applicants submit that the cited reference does not teach or suggest all of the elements of the claimed invention as required for rejection under 35 U.S.C. 103. Claims 7-9 depend on independent Claim 1; Claims 19-21 depend on independent Claim 16; and Claims 32-34 depend on independent Claim 28. As described above, the '723 patent does not teach all of the elements of independent Claims 1, 16, and 28. In particular, the '723 patent does not teach the step of "exposing said plurality of extension primers and said extension agent to said target nucleic acid under conditions wherein primers comprising first regions that are complementary only to an inaccessible site in said target nucleic acid are not extended by said extension agent, and wherein primers comprising first regions that are complementary to at least one accessible site of said target nucleic acid form an extension product," the step of "determining at least a portion of the sequence of an extension product," or the steps of "treating said extension products with said amplification agent and said first and second amplification primers to generate one or more amplification products, said amplification products having a length, wherein said length of said amplification products provides a distance of an accessible site on said target nucleic acid from said first domain of said target nucleic acid" and "determining a location of one or more accessible sites on said target nucleic acid using said distance." Nor does the '723 patent suggest modifying its teachings to provide these elements of Claims 7-9, 19-21 and 32-34. As such, the Examiner has failed to provide a prima facie case of obviousness. If an independent claim is nonobvious, any claim depending there from is nonobvious. MPEP 2143.03. As such, the applicants submit that Claims 7-9, 19-21 and 32-34 are non-obvious and respectfully request that the rejection be withdrawn.

CONCLUSION

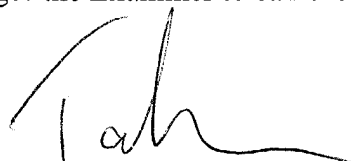
For the reasons set forth above, it is respectfully submitted that Applicants' claims should

PATENT

Attorney Docket No. **FORS-04586**

be passed to allowance. Should the Examiner believe that a telephone interview would aid in the prosecution of this application, Applicants encourages the Examiner to call the undersigned collect at (608) 218-6900.

Dated: 4-21-03



Tanya A. Arenson
Registration No. 47,391

MEDLEN & CARROLL, LLP
101 Howard Street, Suite 350
San Francisco, California 94105
415.904.6500